

PATENT SPECIFICATION

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368,504

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PROVISIONAL SPECIFICATION.

Improvements relating to Fastening Devices for Trunks, Cases and the like.

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We, J. B. BROOKS AND COMPANY LIMITED, a Company registered under the Laws of Great Britain, and HENRY ROBERT HORDEN, British Subject, both of Criterion Works, Great Charles Street, Birmingham, do hereby declare the nature of this invention to be as follows:—

This invention relates to fastening devices for trunks, cases and the like, but particularly for wardrobe trunks wherein the two folding or hinged-together portions of the trunk are adapted to be drawn tightly together, after having been nearly closed by hand, by means of a plurality of interconnected fastening devices adapted to be operated simultaneously by a common actuating means preferably situated near one end of the trunk so that the fastening devices can be conveniently operated from the upper end of the trunk when the same is standing vertically on end as is the case when being filled.

The object of the present invention is to provide improved fastening means which can be easily operated and which effects a substantially direct closing pull upon the one portion of the trunk or the like.

According to the invention, the fastening means comprises a plurality of fastening members on one portion of the trunk or the like co-operating with engageable parts on the other portion, said members being operable from a common actuating means so as first to move laterally in relation to said co-operating parts to engage therewith, and then to be moved in a direction to exert a substantially direct pull upon the said parts in order to draw the two portions of the trunk or the like closely together. Also, according to the invention, the fastening means comprises a longitudinally-movable member on one portion of the trunk or the like, means for operating said member from the exterior of the said trunk or the like, a plurality of angularly-movable or rotatable members operatively engaged by the longitudinally-movable member and fastening members carried by or operatively engaged by the said angularly-

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movable or rotatable members so as to be adapted to be moved by the operation of the longitudinally-movable member first into engagement with co-operating parts on the other portion of the trunk or the like and then drawn inwards so as to exert a substantially direct pull upon the said co-operating parts in order to draw the two portions of the trunk closely together.

Conveniently the said fastening means may comprise a sliding bar upon the one portion of the trunk or the like having rack teeth gearing with a plurality of toothed wheels each of which carries or gears with a fastening member, such as a hook, adapted to co-operate with a fitting on the other portion of the trunk or the like, one of the said toothed wheels being adapted to be rotated from the exterior of the trunk or the like so as to cause the simultaneous engagement and operation of all the said fastening members. Preferably the exterior means for rotating the one toothed wheel consists of a hasp fitting or hinged plate mounted on the wheel spindle, and carrying at its outer end a lock or latch device adapted, when the trunk or the like is closed, to be engaged with a co-operating fixed retaining part.

In carrying out the preferred form of the invention in connection with a wardrobe trunk, mounted upon the inside of the front flange or side of one half or portion of the trunk is a longitudinally-disposed flat bar extending for nearly the full length of the trunk and formed upon one edge, near opposite ends, with two sets of rack teeth.

This bar is mounted to slide within two spaced guide casings, which are situated adjacent the rack teeth and within each of which is housed a rotatable toothed wheel meshing with the respective rack portion of the sliding bar. The toothed wheel which is at the lower end of the trunk when the latter is in its upright or on-end position, while being filled, is mounted upon a plain pivot, but the other wheel, which is near the top of the trunk, is fixed to a spindle (such as by fitting on a square part thereof) which extends to

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the outside of the trunk and carries upon its outer end a lever or arm comprising a disc or plate fixed to the spindle and a strap or bar, hinged to the said disc or plate so as to be adapted to be raised away from the trunk, and carrying at its outer end key-operated lock mechanism contained in a hollow boss at the back with diametrically-opposite latch bolts extending through apertures in the wall of the boss. When then trunk is closed the said boss is adapted to be engaged within a socket in the face of the trunk so that the latch bolts snap behind a flange or undercut part of the socket but can be withdrawn from engagement therewith by means of a key.

By turning the lock-carrying lever or arm angularly, the upper toothed wheel can be rotated and the movement of this wheel is transmitted, through the medium of the common rack bar, to the lower toothed wheel which thus moves angularly simultaneously with the upper wheel. Upon the face of each of the toothed wheels a double-armed lever or fastening member is mounted, the same being adapted to turn freely upon an eccentrically-located stud on the wheel, normally at the side of the wheel centre which is nearest the free edge of the flange or front face of the trunk upon which the wheels are mounted. The lever or fastening member preferably has a hook at its outer end adapted to co-operate and engage with a loop, staple or like engaging part on the edge of the portion of the trunk that is adapted to be drawn towards the portion carrying the rack bar and wheels. The opposite end of the pivoted fastening member is in the form of a tail part which engages within an aperture in the outer side of the casing which houses the toothed wheel.

In operation, when the case has been filled it is closed by hand until the edges of the two portions nearly come together, the rack bar being in such a position that the pivoted fastening members or hooked levers on the one portion of the trunk are to one side and clear of the loops, staples or the like on the other portion of the trunk. In this position the said fastening members or levers are inclined, the eccentric studs on the toothed wheels being towards the outer sides of said wheels, that is, towards the sides which are remote from the rack bar. The lock-carrying lever is then turned angularly to cause both toothed wheels to turn simultaneously so as first to carry the pivoted fastening members or hooked levers in a lateral direction towards and into interlocking engagement with the co-operating loops, staples or the like. After this engage-

ment, continued rotation of the wheels will cause the fastening levers to turn angularly until they are substantially at right angles to the rack bar, this being due partly to the arc of movement of the eccentric pin and partly due to the control exerted on the levers by the co-operation of the casings; and as the wheels continue to turn the levers move towards the rack bar substantially at right-angles thereto and exert a direct pull upon the loops, staples or the like on the other portion of the trunk, thereby drawing the two portions tightly together. When this position is reached the hooked arms of the levers bear against the sides of the casings and suitably-situated stops or projections on the wheels engage against the back edges of the levers so as to keep the said levers pressed tightly against the casing, thus preventing accidental disengagement of their hook ends from the loops staples or the like. After the two portions of the trunk have thus been brought together the lock-carrying arm is folded flat against the trunk and the boss enclosing the lock is engaged within its retaining socket so that the bolts snap under the flange or undercut part thereof and can only be disengaged by means of a key.

To unfasten the trunk, the lock-carrying arm is released and turned angularly to impart simultaneous rotation to both toothed wheels in a direction opposite to that required for the fastening of the trunk. The hooked levers are thereby moved away from the rack bar and, owing to the path of movement of the pivot studs and to the tail ends of the levers being restrained by the edges of the co-operating gaps in the outer sides of the casings, the said levers are caused to move angularly in a lateral direction in relation to their engaging loops, staples or the like, and thus their hooked ends are disengaged therefrom, enabling the trunk to be opened.

In a modification, instead of the hooked fastening members being in the form of levers pivoted upon the toothed wheels, they may consist of slides having rack teeth along one edge engaging with the respective wheels and slidably guided by the casing or by a pin-and-slot arrangement, the tails of the levers or the slots therein being suitably curved or shaped so that by their co-operation with the casing or guide pins the levers are caused to turn angularly out of engagement with the loops, staples or the like during the unfastening of the trunk, and are turned into a position at right angles to the rack bar after engagement with the said parts during the fastening of the trunk so as

then to exert a direct pull for the closing of the case.

Instead of toothed gear wheels being employed, double-armed levers may be used, one arm engaging a recess in the longitudinal actuating bar and the other engaging or being pivoted to the hooked fastening member, whose movement is suitably guided.

In a further modification, instead of employing stops or projections to engage the back edges of the hooks when the trunk is closed, disengagement of the said hooks may be prevented by making the lateral heads of the hooks undercut or

inclined upon their under edges, so that the loops, staples or the like are engaged within the acute angles thereby formed beneath the said heads of the hooks. Further, the hook members may be arranged to co-operate with the loops, staples or the like so as positively to open the trunk a short distance when the hook members are operated to release the fastenings.

Dated this 21st day of February, 1931.
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COMPLETE SPECIFICATION.

Improvements relating to Fastening Devices for Trunks, Cases and the like.

We, J. B. BROOKS AND COMPANY LIMITED, a Company registered under the Laws of Great Britain, and HENRY ROBERT HORDEN, British Subject, both of Criterion Works, Great Charles Street, Birmingham, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to fastening devices for trunks, cases and the like, but particularly for wardrobe trunks wherein the two folding or hinged-together portions of the trunk are adapted to be drawn tightly together, after having been nearly closed by hand, by means of a plurality of interconnected fastening devices adapted to be operated simultaneously by a common actuating means situated near one end of the trunk so that the fastening devices can be conveniently operated from the upper end of the trunk when the same is standing vertically on end as is the case when being filled.

The object of the present invention is to provide improved fastening means which can be easily operated and which effects a substantially direct closing pull upon the one portion of the trunk or the like.

The invention comprises fastening means consisting of a longitudinally-movable member inside one portion of the trunk or the like, means for operating said member from the outside of the said trunk or the like, a plurality of angularly-movable or rotatable members operatively engaged by the longitudinally-movable member, and fastening members carried by or operatively engaged by the said angularly-movable or rotatable members

and co-operating with a fixed guide part so as to be positively moved by the operation of the longitudinally-movable member first into engagement with co-operating parts on the other portion of the trunk or the like and then drawn inwards so as to exert a substantially direct pull upon the said co-operating parts in order to draw the two portions of the trunk closely together.

Conveniently the said fastening means may comprise a sliding bar upon the one portion of the trunk or the like having rack teeth gearing with a plurality of toothed wheels upon each of which is pivoted a fastening member, such as a hook, adapted to co-operate with a fitting on the other portion of the trunk or the like, one of the said toothed wheels being adapted to be directly rotated from the exterior of the trunk or the like so as to cause the simultaneous engagement and operation of all the said fastening members. Preferably the exterior means for rotating the one toothed wheel consists of hasp fitting or hinged plate mounted on the wheel spindle and carrying at its outer end a lock or latch device adapted, when the trunk or the like is closed, to be engaged with a co-operating fixed retaining part.

Figure 1 of the accompanying drawings represents a section through a trunk with the fastening mechanism in elevation, the trunk being shown nearly closed but unfastened, and the gear casing at the upper end of the fastening mechanism being represented in section in order to show the gearing more clearly.

Figure 2 is a similar view but shows the trunk fully closed and fastened.

Figure 3 is a view on a larger scale

showing one of the fastening devices in its unfastened position with the trunk slightly open.

Figure 4 is a similar view showing the fastening device in its operative condition, with the trunk fully closed and fastened.

Figure 5 is a transverse section on line 5—5, Figure 2, on a larger scale, showing the external operating means and lock.

Figure 6 is a section on line 6—6, Figure 2.

In carrying out the preferred form of the invention in connection with a wardrobe trunk, as shown in the drawings, mounted upon the inside of the front flange or side of one half or portion 1 of the trunk is a longitudinally-disposed flat bar 2 extending for nearly the full length of the trunk and formed upon one edge, near opposite ends, with two sets of rack teeth 3, 3. This bar is mounted to slide within two vertically spaced guide casings 4, 4, which are situated adjacent the rack teeth and within each of which is housed a rotatable toothed wheel 5 meshing with the respective rack-portion 3 of the sliding bar 2. The toothed wheel 5 which is at the lower end of the trunk when the latter is in its upright or on-end position while being filled, is mounted upon a plain pivot 6, but the other wheel 5, which is near the top of the trunk, is fixed to a spindle 7 (such as by fitting on a square part 8 thereof as shown in Figure 5), which extends to the outside of the trunk and carries upon its outer end a lever or arm comprising a disc or plate 9 fixed to the spindle and a strap or bar 10, hinged to the said disc or plate at 11 so as to be adapted to be turned away from the trunk, and carrying at its outer end key-operated lock mechanism contained in a hollow boss 12 at the back with diametrically-opposite latch bolts 13 extending through apertures in the wall of the boss. When the trunk is closed the said boss 12 is adapted to be engaged within a socket 14 in the wall of the trunk so that the latch bolts 13 snap behind a flange or shoulder of the socket but can be withdrawn from engagement therewith by means of a key.

By turning the lock-carrying lever or arm 9, 10, angularly, the upper toothed wheel 5 can be rotated and the movement of this wheel is transmitted, through the medium of the common rack bar 2, to the lower toothed wheel 5 which thus moves angularly simultaneously with the upper wheel. Upon the face of each of the toothed wheels 5, 5, a double-armed lever or fastening member 15 is mounted, the same being adapted to turn freely upon an eccentrically-located stud 16 on the

wheel, normally (Figures 1 and 3) at the side of the wheel centre which is nearest the free edge of the flange or front side of the trunk upon which the wheels are mounted. The said lever or fastening member 15 has a hook 17 at its outer end adapted to co-operate and engage with a loop or staple 18 or like engaging part on the edge of the portion 19 of the trunk that is adapted to be drawn towards the portion 1 carrying the rack bar and wheels. The opposite end of the pivoted fastening member 15 is in the form of a tail part 20 which engages within an aperture 21 in the outer side of the casing 4 which houses the toothed wheel, so as to co-operate with the lower end of said outer side as shown in Figures 3 and 4.

In operation, when the case has been filled it is closed by hand until the edges of the two portions 1, 19, nearly come together, as shown in Figures 1 and 3, the rack bar 2 being in such a position that the pivoted fastening members or hooked levers 15 on the one portion of the trunk are to one side and clear of the loops, staples or the like 18 on the other portion of the trunk. In this position the said fastening members or levers 15 are inclined, the eccentric studs 16 on the toothed wheels 5 being towards the outer sides of said wheels, that is, towards the sides which are remote from the rack bar. The lock-carrying lever 9, 10, is then turned angularly into the position shown by dotted lines in Figure 2, to cause both toothed wheels 5, 5, to turn simultaneously so as first to carry the pivoted fastening members or hooked levers 15 in a lateral direction towards and into interlocking engagement with the co-operating loops, staples or the like 18. After the initial engagement, continued rotation of the wheels 5 will cause the fastening levers 15 to turn angularly until they are substantially at right angles to the rack bar and in full engagement with the parts 18, this being due partly to the arc of movement of the eccentric pin 16 and partly due to the control exerted on the levers by the co-operation of the tail ends 20 of the levers with the rear walls of the casings; and as the wheels 5 continue to turn the levers 15 move towards the rack bar 2 substantially at right-angles thereto and exert a direct pull upon the loops, staples or the like 18 on the other portion of the trunk, thereby drawing the two portions 1, 19, tightly together. When this position is reached, as shown in Figures 2 and 4, the hooked arms of the levers bear against the lower side walls of the casings 4 and suitably-situated stops or projections 22 on the wheels engage against the back edges of

the levers so as to keep the said levers pressed tightly against the casing, thus preventing accidental disengagement of their hook ends from the loops, staples or the like 18. After the two portions of the trunk have thus been brought together the lock-carrying arm 9, 10, is folded flat against the trunk and the boss 12 enclosing the lock is engaged within its retaining socket 14 so that the bolts 13 snap under the flange or shoulder thereof and can only be disengaged by means of a key.

To unfasten the trunk, the lock-carrying arm 9, 10, is released and turned angularly to impart simultaneous rotation to both toothed wheels 5, 5, in a direction opposite to that required for the fastening of the trunk. The hooked levers 15 are thereby moved away from the rack bar 2 and, owing to the path of movement of the pivot studs 16 and to the tail ends 20 of the levers being restrained by the edges of the co-operating gaps in the outer sides of the casing 4, the said levers are caused to move angularly in a lateral direction in relation to their engaging loops, staples or the like, and thus their hooked ends are disengaged therefrom, at the same time acting upon the shoulder 23, of the trunk lid with a cam action (see Figure 3) so as positively to open the trunk a short distance.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Fastening means for trunks, cases and the like comprising a longitudinally-movable member inside one portion of the trunk or the like, means for operating said member from the outside of the said trunk or the like, a plurality of angularly-movable or rotatable members operatively engaged by the longitudinally-movable member, and fastening members carried by or operatively engaged by the said angularly-movable or rotatable members and co-operating with a fixed guide part so as to be positively moved by the operation of the longitudinally-movable member first into engagement with co-operating parts on the other portion of the trunk or the like and then drawn inwards so as to exert a substantially direct pull upon the said co-operating parts in order to draw the two portions of the trunk or the like closely together.

2. Fastening means for trunks, cases

and the like comprising a sliding bar upon the one portion of the trunk or the like having rack teeth gearing with a plurality of toothed wheels upon each of which is pivoted a fastening member, such as a hook, adapted to co-operate with a fitting on the other portion of the trunk or the like, one of the said toothed wheels being adapted to be directly rotated from the exterior of the trunk or the like so as to cause the simultaneous operation of all the said fastening members to cause the same to move laterally to engage the co-operating fittings on the trunk or the like and then to move inwards so as to exert a substantially direct pull upon the said fittings in order to draw the two portions of the trunk or the like closely together.

3. Fastening means for trunks, cases and the like as claimed in claim 1 or 2, wherein each fastening member consists of a double-armed lever pivoted upon the rotatable member or wheel, said lever having a hook end engageable with the co-operating part on the trunk or the like and also having a tail end co-operating with and guided by a part of a casing or housing enclosing the said rotatable member or wheel, so that the said fastening member is caused to move in the desired manner for first engaging the co-operating part on the trunk or the like and then exerting a direct closing pull thereon, substantially as described.

4. Fastening means for trunks, cases and the like as claimed in claim 3, wherein each pivoted fastening member is held between a part of the casing or housing and a stud or projection on the rotatable member or wheel when the trunk or the like is closed, substantially as described.

5. Fastening means for trunks, cases and the like as claimed in claim 3, wherein the hook ends of the double-armed levers, when being disengaged, act upon a co-operating part of the trunk or the like in order positively to open the said trunk or the like a short distance, substantially as described.

6. Fastening means for trunks, cases and the like substantially as herein described with reference to the accompanying drawings.

Dated this 25th day of September, 1931.

H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for Applicants.

Fig. 1.

[This Drawing is a reproduction of the Original on a reduced scale.]

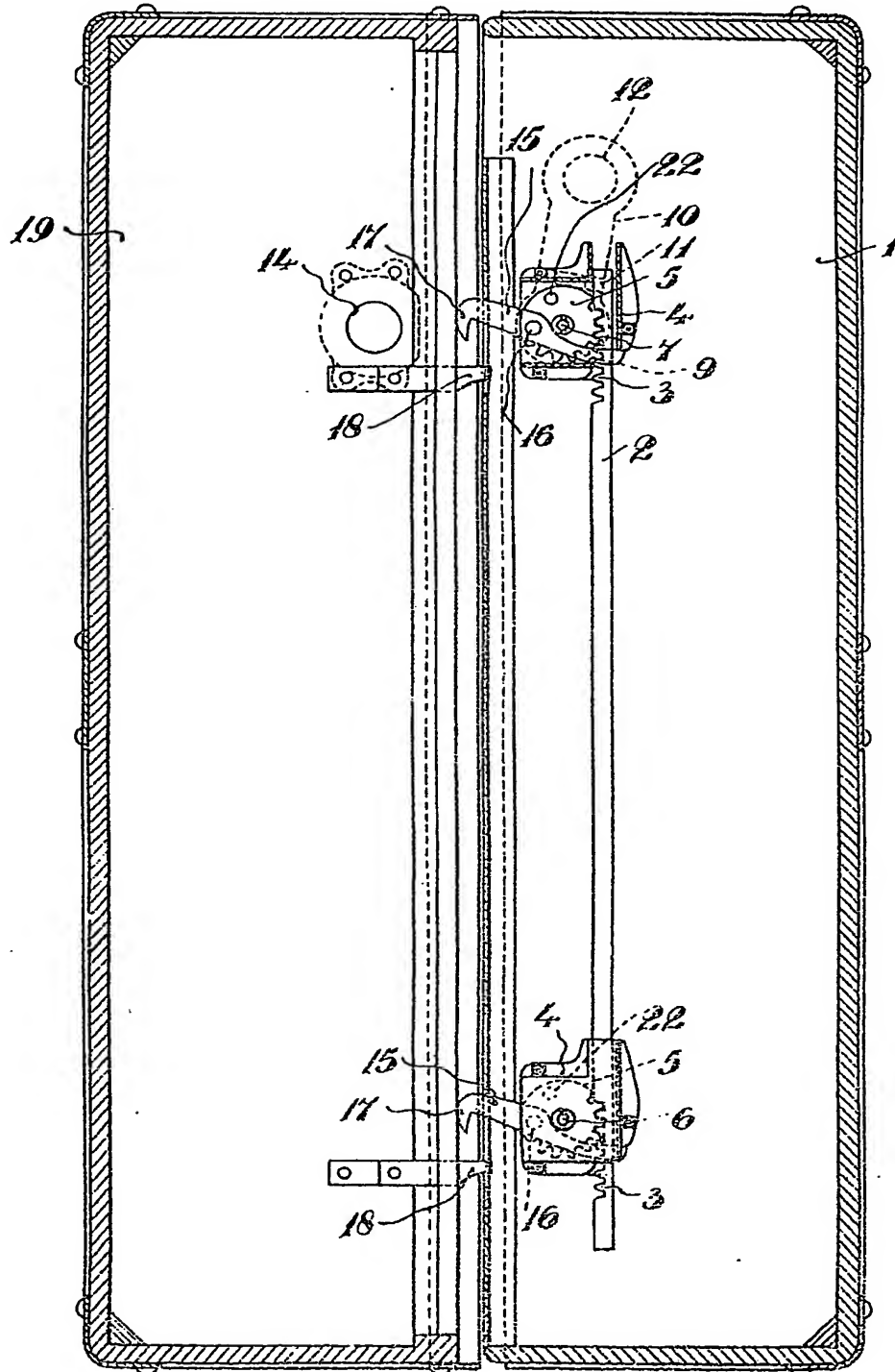
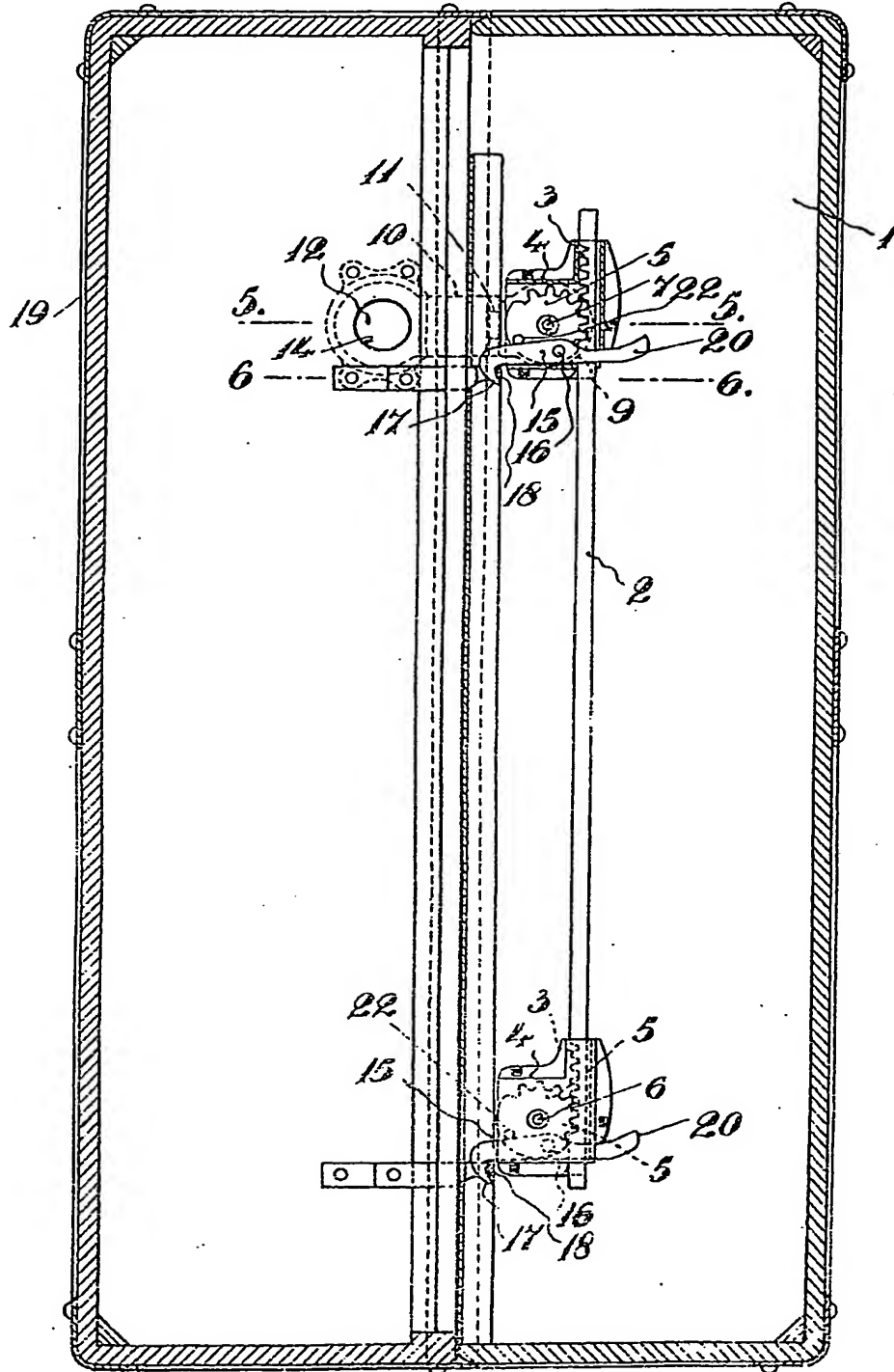


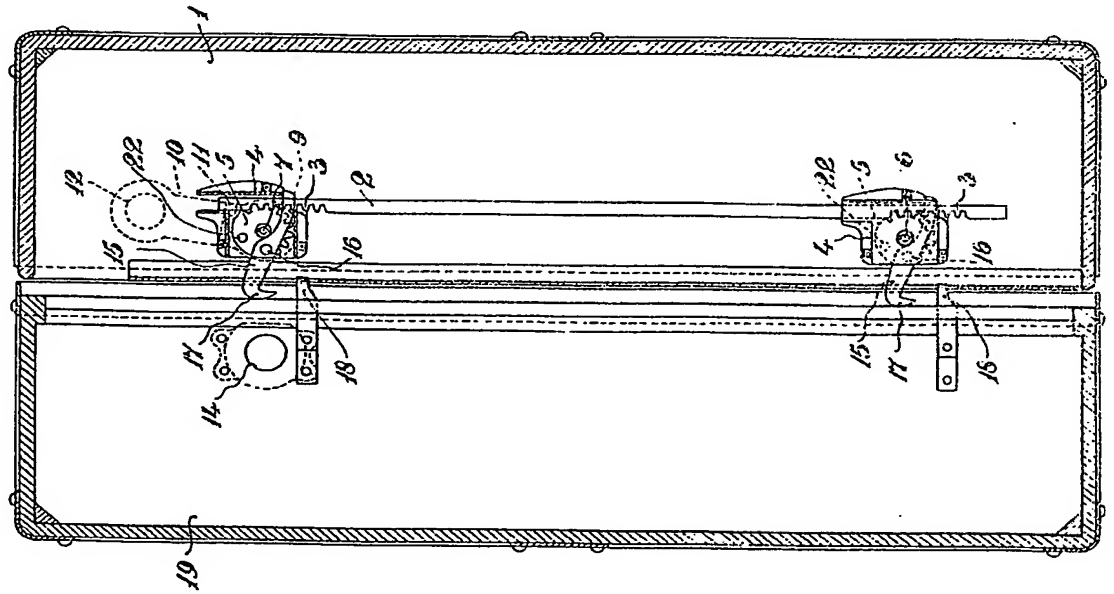
Fig. 2.



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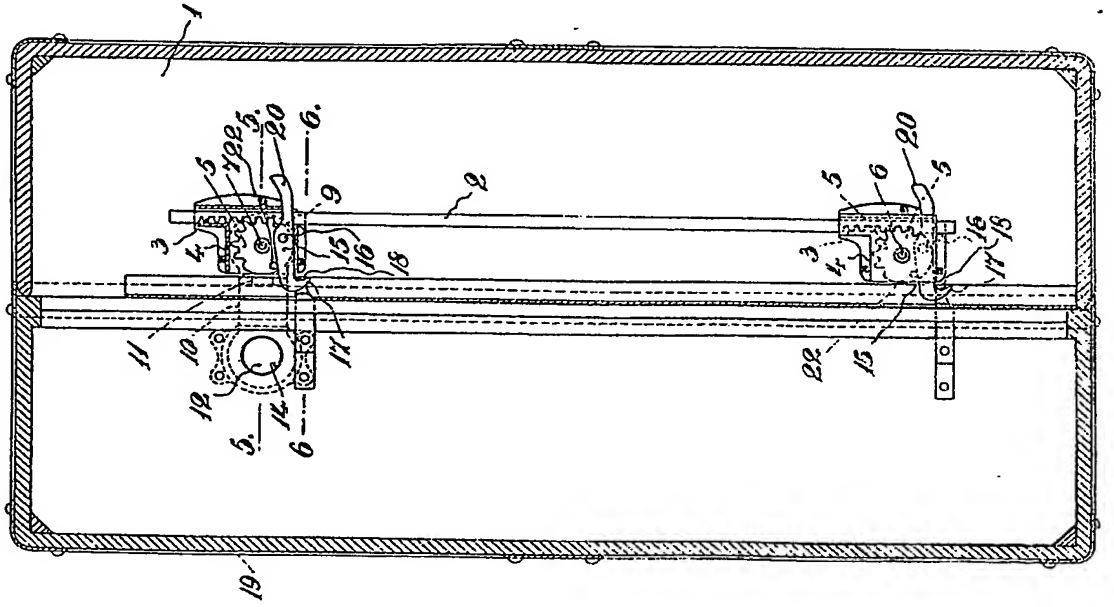
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Fig. 1.



SHEET 1

Fig. 2.



4 SHEETS
SHEET 2

Fig. 3.

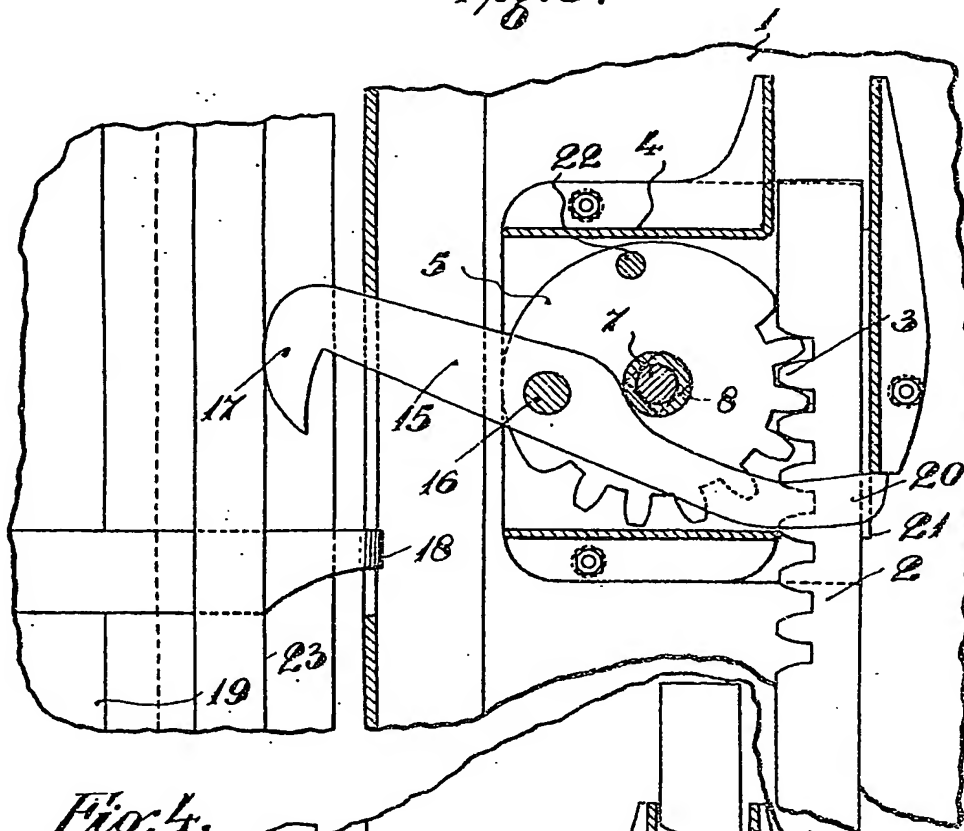
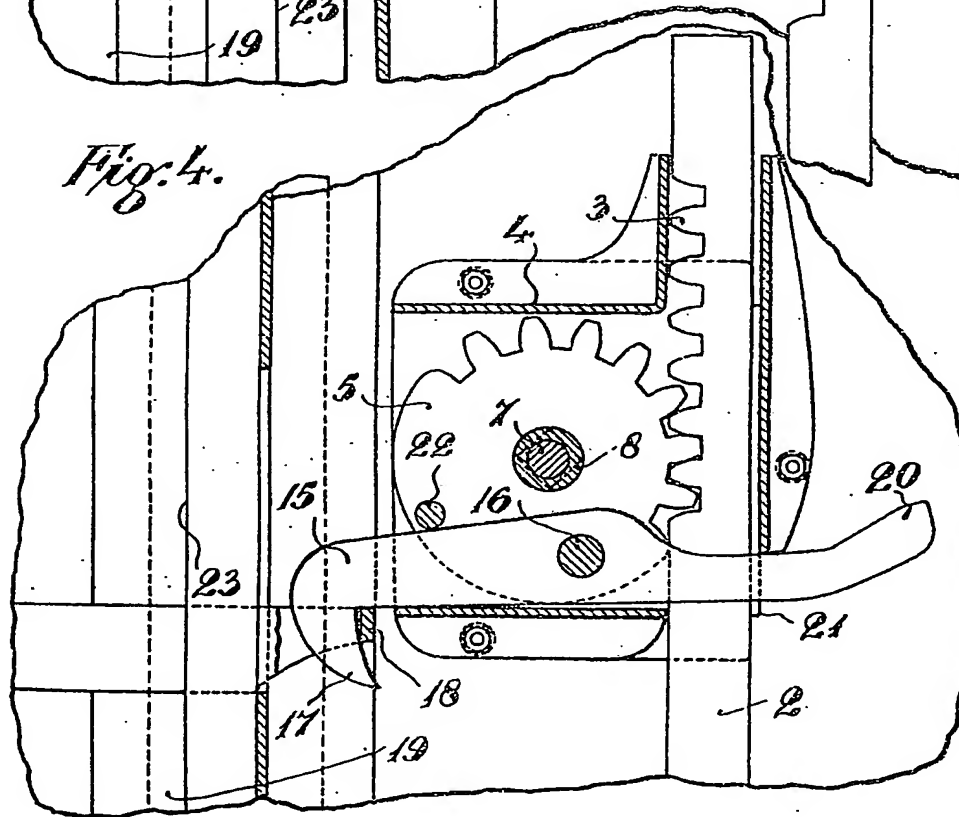


Fig. 4.



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 5.

Fig. 6.

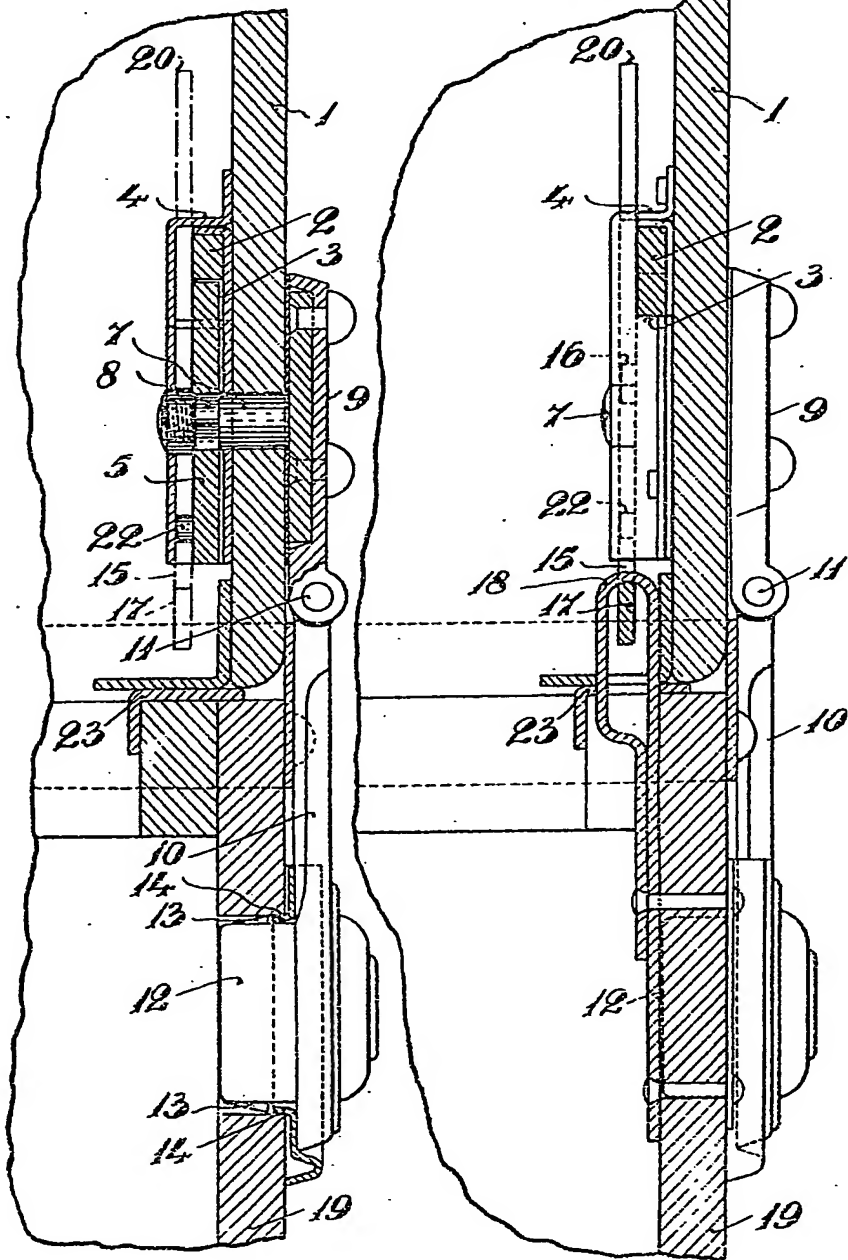


Fig. 3.

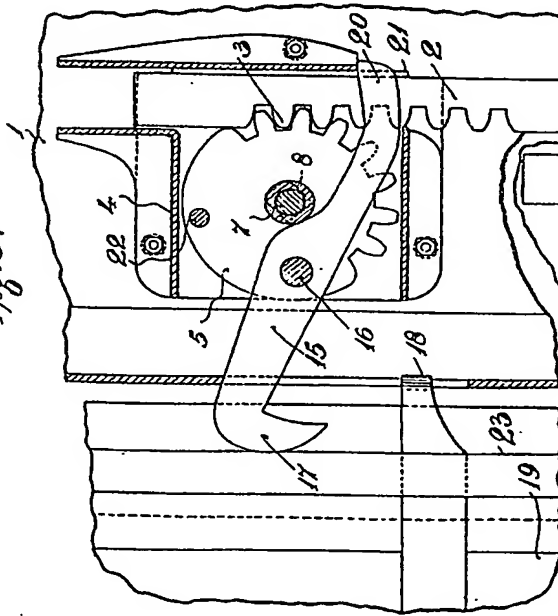


Fig. 4.

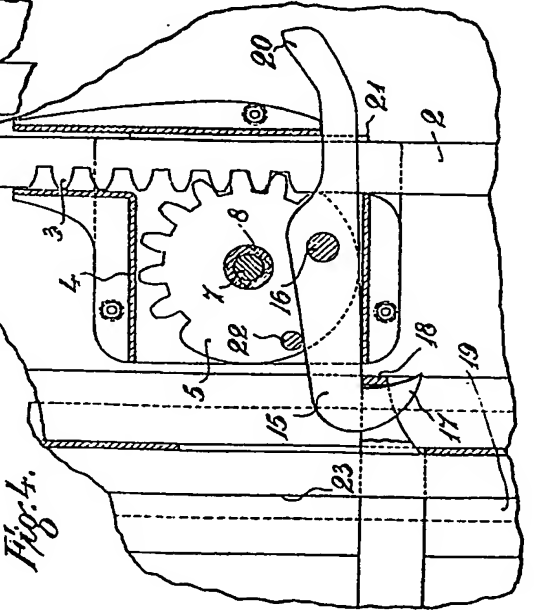


Fig. 5.

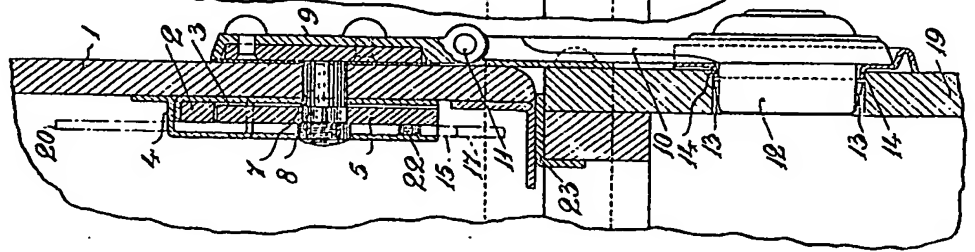
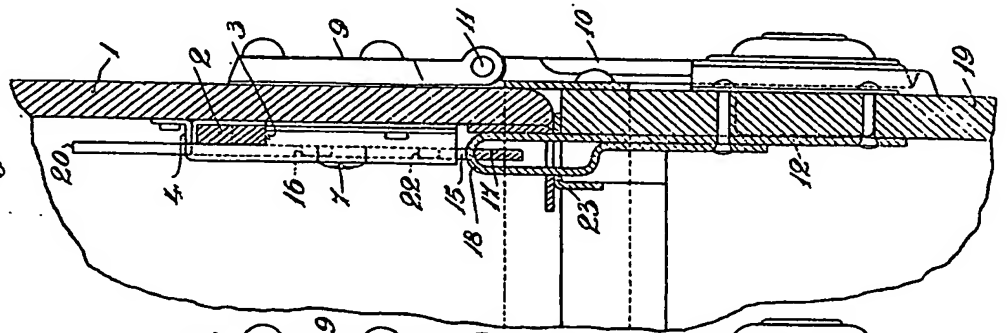


Fig. 6.



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